

# THE PLAYGROUND OF EDUCATION: Parallels between alternative childhood learning & the interdisciplinary multicultural university



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# Abstract:

The intention with this research publication, is to create a holistic understanding of the contemporary creative learning techniques that are intended for multicultural and interdisciplinary groups within higher education workshops. How can we improve interdisciplinary learning techniques for students in a continually interdisciplinary world? Through an increased multicultural and interdisciplinary approach in Finland, new learning techniques are taught within various educational levels. How do workshop facilitation techniques parallel learning techniques that are taught in alternative primary education? The experiential learning theory, and other key aspects of learning will be discussed.

The findings will include how alternative methods of primary education are taught compared to higher education workshops for learning. The empirical data will include personal engagement cases within higher education, experience teaching in 4kidsKielikerhot Oy, an English language learning club for children, interviews, and related literature.

After the analysis of the empirical data, I will attempt to make transparent the parallel concepts I have arrived at between higher education, and alternative childhood learning practices. From this comparison I will discuss how the merging of these techniques could benefit higher education teaching practices. The design intervention Lateral Soup will serve as a prototype guide for workshop content in order to implement alternative childhood learning techniques into higher education.

In conclusion, I hope this publication will be a good reference for instructors which are developing new course curriculum, and designers who are interested in creating educational workshops and instructional website content.

# Acknowledgements

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**Keywords:** workshops, Experiential Learning, interdisciplinary learning techniques, creativity, service design, student wellbeing

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`Real learning gets to the heart of what it means to be human. Through learning we re-create ourselves.` - Peter M. Senge

# Terminology

## **Abbreviations:**

HE- Higher education

ELT- Experiential Learning Theory

**workshop**- a group of individuals gathered to learn a process, finding a solution for a challenge, or understand one another within a short frame of time.

**workshop facilitator**- an individual who has the capability to facilitate knowledge in group settings rather than teach knowledge directly. This happens through cooperation between students and a less traditional role of teaching.

**Systems Thinking**- The discipline of systems thinking provides a different way of looking at problems and goals—not as isolated events but as components of larger but less visible structures that affect each other.

**Experiential Learning Theory (ELT)** - Knowledge based off of real life experiences that transforms the student to learn through cognition. Learning that happens through interaction and observation rather than taking a solely passive role.

**Kinaesthetic Learning**- When learning takes place through physical activity.

**web platform**- a virtual service for creating a space to view and upload knowledge that is usable by the public.

**Aalto University**- University founded in 2010 that consists of the school of Art, Engineering, and Business.

**creativity**- an act, idea or product that changes an existing domain or that transforms an existing domain into a new one, Csikszentmihalyi (1997).

**Divergent Thinking**- Breaking away from familiar or established ways of doing something in order to innovate or create.

**Service design**- a process of creating user insight design schemes for services or products.

**User Inspired design**- Design that is human centric and designed in a process to meet the needs of the user of the service specifically.

**Grounded theory research**- qualitative research method of researching from the social world in order to solve challenges in a systematic or organic way.

**Prototyping**- testing out an idea or project as smaller version. Usually used in the design field.

**Cognitive diversity**- differences in knowledge, base, skill or educational background and perceiving in world.

**Intrinsic and extrinsic rewards**- An intrinsic reward is an intangible award of recognition, a sense of achievement, or a conscious satisfaction. Extrinsic rewards are physical items or things which show the student has done a job well done.

**designer**- presenter of knowledge both in the tangible facilitation form, and as a workshop facilitator for social interaction.

**Lateral thinking**- using different forms of knowledge to come up with new creative ideas.



# Foreword

I first became interested in group techniques for learning, while participating in a service design project, Talkoot Taxi, a part of World Design Capital 2014. The project took place within the Sustainable Technologies interdisciplinary course in Aalto University.



Entrepreneurs and local youth participants in workshops

The main purpose for creating workshop content for groups, was to encourage local entrepreneurs, and particularly disadvantaged teens in a multicultural environment to put to action how they could develop their own communities. The learning lesson for us as a student team, was how we would solve challenges, and create workshop content through an experiential learning process. When I moved to Finland, I was encouraged to work more in an interdisciplinary sense with other students from other educational and ethnic backgrounds within my exchange studies and Master's degree. This was very different from my learning experience at San Jose State University, California where excellence was usually more categorized by individual efforts.

In my learning experience with courses, and projects I realized I have learned in a more rapid and engaging way through foreign language learning, and a participatory approach than I ever did sitting in a lecture hall. Why then do these other learning experiences while working with other students stick more firmly in my mind than lecture centric learning? In the following chapters I propose with this topic a shift in mindset for the reader backwards, to how a child might prefer to learn.

# Introduction: Is the University just one big playground?

Within this research process, I will observe and analyse, the current interdisciplinary workshop learning techniques within higher education HE, and illustrate their parallels to alternative primary education techniques. The focus is aimed at improving student wellbeing and learning in a multiculturalism and interdisciplinary working environment. The aim is not to give a direct design solution, but to see the similarities and differences, through a systematic approach of research, and then propose a prototype design intervention.

## **Research questions**

*How do interdisciplinary group learning workshop techniques in higher education parallel learning techniques used in alternative primary education?*

*How could interdisciplinary group learning techniques in higher education benefit from those used in alternative primary education?*

## **Design intervention**

*How could an educational online workshop guide inspire interdisciplinary group learning for both workshop facilitators and students in higher education?*

According to Osborne (2007), recently there have been changes to learning techniques in HE to accommodate for an ever increasing diverse student population, and an expanding of interdisciplinary and non traditional degree programs. In western universities where programs are taught in English, there have been an increase of international students, who have studied abroad alongside home university students Carroll (2005).

The student union at Aalto University (AYY), has taken initiatives to question outdated teaching techniques, and make them transparent from a student's point of view for faculty and educational researchers through the production of a documentary. The production covers the topics of interdisciplinary and multicultural education, and was published within the student union as a teaching guide for Aalto University faculty. The aim of the publication was to promote student activism for learning techniques specifically from a foreign student

perspective. The main point made by students was the need for a more active approach to learning. The video summarized that all active forms of learning such as student-centered, collaborative, and blended, showed higher retention rates than the traditional forms of lectures, exams, and didactic forms. The increased multiculturalism and interdisciplinary programs have shaped the way Aalto has conducted its teaching program in the recent years. According to statistics, only 15% of students are planning on going back to their home country after graduation. Their goal is to integrate into Finnish society, and pursue their education or career further within the country, Ovaska (2015).

I started this topic with the assumption that there are clear parallels between alternative childhood learning and higher education workshops in which I have been a participant, as well as a facilitator. I will introduce alternative childhood learning as a type of learning for children that does not use the traditional didactic learning processes. Based on my work experience and literature review alternative learning environments for children are meant to inspire new learning techniques through senses that might not be readily used in the traditional classroom. Some of these learning techniques with alternative childhood learning have started to appear simultaneously in my research of HE workshops. My assumption is that through the further implementation of these techniques into HE, it might be possible to unlock interdisciplinary creativity and help students work better together in courses and projects.

It appears that HE has shifted in diversity and interdisciplinary approaches in recent years. In that case then why wouldn't it be more beneficial to also shift learning techniques to accommodate for these rapid changes? It seems that most students from interdisciplinary programs are speaking their second language and also come from different cultures. In that case, alternative childhood learning techniques that are presented here might be the common ground for group understanding. This is based on the purpose of alternative childhood methods for students are created for them to function better together within a group, as well as learning skill's. It might be then that by using alternative childhood learning techniques in HE could possibly open up a hidden language that could be used by students within workshops. Cognitive diversity, according to Paulus (2003), is defined by the most highly functioning creative groups are those which have a

higher level of cognitive diversity or in more broad terms multi-disciplinary.

According to Leonard, (1999) a cognitive heterogeneous group is capable of providing a novel ,potentially useful alternatives. ( p. 21)

Interpersonal congruence is defined as the act of appraising others, similar to one's own self-assessment Polzer (2008). Diverse student groups with lower interpersonal congruence traits, seem to have lower group learning and creativity than students with higher interpersonal congruence traits. Group creativity could either falter or blossom, depending on if the students have a healthy and equal relationship with one another. The reasoning behind including alternative childhood learning in this research is because the techniques encourage students to work better together and form cooperative relationships while learning. My hypothesis is that HE workshops could become the bridge for implementing childhood learning techniques in order to help diverse adult groups work better together.

## 2.0 Out of the school desk: Alternative childhood learning techniques

Children learn by exploring their environment in order to see further their interdependencies and limitations within it. Experiential learning has been integrated into alternative childhood education by educational activists such as Maria Montessori, who established the international Montessori school which instills learning through tangible experiences. The international Montessori education school system instills critical thinking and a ``no textbook`` learning mentality. The concept of learning suggests children as being self-sufficient, critical thinkers, with the ability to solve problems independently Dieleman (2006).

According to Senge (1994), systems thinking could be a strong metaphor for alternative childhood educational practices. He also refers to children as the best learners of systems thinking, where the tools to analyse relationships and patterns are intuitive already by the child. ``In schools where systems thinking is woven in throughout the curriculum, and students and teachers work together as learners and mentors, rather than passive learners and all-knowing experts, these innate skills can truly flower...I believe we will just see how readily systems citizenship develops-and how ineffective the traditional classroom, teacher-centric model of learning actually. `` (p. 361).

Within Finland, there have been measures to develop childhood education to accommodate for the diverse needs of students. For an interdisciplinary workshop, the Helsinki Design Lab involved a number of diverse specialists in education. The workshop was arranged to design a strategy for promoting student well-being. The research conducted a re-thinking design strategy to develop the educational program for K-12 students. The educational concerns were related to the non-conforming students who were at risk for not graduating from high school. The new Suomi School prototyped solutions that were based on experiential learning, collaboration, cultural skills, and problem-solving. The main purpose, was to enable children to grow into agile thinkers who can deftly handle new situations. The Helsinki Design Lab arrived at the consensus that education in Finland needs strategic development to a more diverse educational model Boyer (2011).

While the new Suomi School has questioned the current standard education, Lengel (2010) proposes an alternative learning environment that promotes movement to release energy from students and help them to function better as social citizens. The author has identified movement for children in the classroom, as an effective element for learning. The brain state for class cohesion and psychological safety are discussed as aspects of alternative childhood learning.

Then through teaching children with physical movement, grade school teachers are not just producers of knowledge for children but developers of successful members of society. The life skills taught are communication, anger management, decision-making, conflict resolution, behavioural management, health, and wellbeing. In the author's theory of teaching these important traits for students to learn

## 2.1 What is a workshop?

should go along with the natural rhythm of being human in a sense, and utilizing movement as a part of the entire teaching curriculum. The term workshop could be misunderstood since there are many definitions within and outside of HE. In this context, workshop could be defined by Stanfield (2002), as the process of reaching a consensus together within a group of people. The aim of this type of workshop is not for participants learn a concrete skill, but to understand one another better, the task at hand, or to find a solution but for encouraging participation and creativity within a group. The workshops I will refer to usually take place as a complimentary educational tool to a seminar or a course. Higher education workshops such as these usually last from ninety minutes to day long events.

Workshops for collaborative group work are becoming more popular in HE for interdisciplinary students to work together. Leonard (1999) suggests that short-term workshops and innovative divergent thinking should be an addition to the group working process in order to strive away from common ways of finding solutions, and become more creative in the group working process.

According to Dieleman (2006) 'Learning that is grasped through apprehension relies on tangible and felt qualities of the immediate experience. (p.838) The methods of learning then involve, exploring, touching, feeling, smelling and listening. These processes rely on intuition, feeling and emotion, which are considered lateral processes of the brain. Effective learning is also related to the functioning of the individual in terms of physical and mental capabilities. The brain is not considered a muscle, but a complex organism, which we have yet to understand the full potential of. Cognitive scientists state that we even retain knowledge, and learn better when we have varied environments. The workshops I will refer to illustrate the use of a different type of environment for learning than the traditional use of a classroom.

In these type of workshops the participants are usually expected by the facilitator, to create the content from the workshop based on their own knowledge and experiences. This can create a sense of unpredictability of workshops.

Universities internationally have begun to implement workshops structures into interdisciplinary courses. The Synthesis studio project course between ARTS and ENG is planned in the early stages of studies, concentrating in communication, teamwork and a sense of community. At Stanford University, CA the (PBL) problem based Learning laboratory is a building design studio that encourages Architecture and Engineering students to work together, in order to enhance interdisciplinary collaboration, Hollmén (2013).

Workshops that inspire adaptability as a trait might be the most beneficial for group creativity. According to, Csikszentmihalyi (1997), adaptability is one of the central parts contributing to creative work according. It is proven that creative individuals are remarkable for their ability to adapt to a variety of different environments, materials and techniques.

## 2.2 Key elements of experiential based learning

My analytical framework will be explored further, by the analysis of the following learning techniques within HE workshops, and within examples of alternative childhood learning. These key techniques below will be analysed in 5.0 Findings chapter.

**group heterogeneity**

**duration of sessions**

**role of music**

**use of role play**

**storytelling**

**movement**

**safety (physical & mental)**

**motivation (Intrinsic & extrinsic rewards)**

**tangibility**

Movement could possibly play a role in increased learning for children. The attention span of a child, versus the attention span of an adult, is considered to be closer than one might assume, which is fifteen to twenty minutes, Lengel (2010). The relationship between physical activity and standardized testing suggested by the California Department of Education, validated a positive connection between high school students performance, and their physical activity level Blakemore (2003). This study draws conclusions about the link between movement and brain functioning. It also summarized key points, such as how the increase of blood and oxygen produces the speed of memory recall and relaxation. Besides positive brain functioning, movement could possibly have a positive effect on student wellbeing. Blakemore (2003) suggests the release of chemicals such as serotonin and dopamine reduce the effects of depression, by as much as fifty percent.

Physical movement has been recognized as a positive learning state in higher education as well. Zodiac dance studio located in the Cable Factory, Helsinki collaborated with students from the MA Creative Sustainability program, within Aalto University to develop the performance Earth Dance. The purpose of the workshop course was for students to experience dance physically in order to integrate sustainability content into the dance routine. The course concept was that student from the program could participate the dance rehearsals themselves, in order to give insights to the instructor for the development of the routine.



The use of games for learning, simulates a real environment for a student, while allowing room for failure and success, and the capability to learn through experience. Workshop games in the forms of storytelling and role play create a chance for experiential learning without a real-life failure. The success of these games are used to the full level when there is a wide variety of students from interdisciplinary backgrounds Dieleman (2006). Storytelling as a learning technique could possibly unite people together, and improve the social wellbeing of people. The positive effects of storytelling can be seen from a scientific perspective. Stories could possibly change brains since the chemical oxytocin is responsible for empathy and narrative transportation. When the brain receives oxytocin, people can become more sensitive to social cues around them Zac (2013).

The cohesiveness of an adult working group may be influenced by either our positive attitude towards people who are similar to us, or negative attitude towards those from dissimilar backgrounds, beliefs, and values, Leonard (1999). Developing class cohesion is a learning technique which is used to create a beneficial emotional climate for students. The emotional state of the student determines how the brain learns new information. Humour and music are shown to have a great effect on emotional states of students and movement being one of the most prominent techniques Lengel (2010).

Intrinsic motivation is defined as the drive for doing something for the sheer enjoyment, interest, and personal challenge of the task itself Hennessey & Amabile (2009). Motivation for creative group learning maybe be stimulated by both intrinsic and extrinsic rewards. According to Leonard (2010), the intrinsic motivation is supported by autonomy, time for own projects, and opportunities to learn. If the intrinsic motivation is already strong enough than the rewards which are usually regarded as extrinsic motivation, can enhance the intrinsic motivation.

## 2.3 Learning through experience

Since workshops are created for the students to be proactive and collaborative, the act of experience through learning has the ability to become an essential part of the workshop process. I will discuss here briefly Experiential Learning theory ELT as a learning concept that encompasses parts of alternative childhood learning practices and HE workshops, and refer to it as ETL from here on. The experiential learning theory was developed into a theory in the 1970's by David A. Kolb and was inspired by the philosophers, Carl Jung, Paulo Freire & Carl Rogers and other 20th century scholars. According to Kolb (2005), there are six principles which are listed below for defining the (ETL, p. 5)

1. Learning is best perceived as a process, not in terms of outcomes.
2. Learning requires the resolution of conflicts. Conflicts, differences and disagreements are what drive the learning process.
3. Learning is a holistic process of adaptation to the world, it involves the integrated functioning of the total person-thinking, feeling, perceiving, and behaving.
4. All learning is relearning. Learning is best facilitated by a process that draws out the student's beliefs and ideas about a topic so that they can be examined, tested and integrated with new, more refined ideas.
5. Learning results from synergetic transactions between the person and the environment.
6. Learning is the process of creating knowledge.

Kolb (1984) writes that when learning is conceived as a holistic adaptive process, it provides conceptual bridges across life situations such as school and work, portraying learning as a continuous lifelong process. The experiential learning theory uses mainly the left side of the brain. The right side of the brain is considered analytical and rational. The uncertainty of the world also has prompted educators to think of a pedagogy that is flexible and adaptable to diversity.

## 3.0 Personal engagement research cases

In the following sections 3.1-3.4 I will briefly introduce the personal engagement cases that will be discussed later in the process sections 4.2-4.4 and 5.0 Findings.

### 3.1 4KidsKielikerhot Oy



Photo courtesy of the site, 4kidsKielikerhot Oy

**Teaching methodology of 4kidsKielikerhot Oy:**

The purpose being to encourage fluent English language speaking skills for Kindergarten to sixth grade, within the Finnish educational system using activity based learning. The English club operates within primary school level facilities and daycare facilities in the cities of Helsinki and Espoo. Each English lesson is compacted into forty five minute sessions that takes place once a week for students enrolled in the autumn and spring term. The lessons are taught by one teacher per school through music, movement, visual aids and verbal learning. The basic principle for the club is to learn through tangible experiences that are fun.

Time Frame	amount of students	time span of teaching	age ranges	Company age
Role: English teacher 31.08-17.12.2015	73 children in total every week	45 minute lessons 10 times per week	kindergarten level, ages three-five years Elementary level, ages 7-12 years	14 years

## 3.2 Sustainable Built Environment Workshop (SBE)

**Co-facilitated workshop:** Briana Romero and Simon Le Roux.

Seminar organized by Dr. Markku Lappalainen, (department of Architecture), and Tiina Laurila (previous Creative Sustainability coordinator).

Photography credits: Glen Forde, MA Creative Sustainability Program, Department of Design.

**Purpose of workshop:** The main aims of the workshop were how to cross collaborate Aalto University with other universities, and how to possible improve interdisciplinary working processes between students with sustainability and wellbeing as the core concepts. Students from different disciplines were invited to participate in the workshop together with the faculty. The seminar was organized in cooperation with the Department of Architecture, the Department of Civil and Structural Engineering, and the Department of Design. Professor Antti Ahlava (the head of the Department of Architecture) and Professor Juha Paavola (the head of Civil and Structural Engineering).

### 3.3 Sustainable Building design course workshop (SBD)

**Workshop facilitated by:** Briana Romero, C.S. program, Department of Design and advisor Simon Le Roux. Course instructor: Markku Lappalainen.

**Purpose of workshop:** to help teams focus, and reflect on the course outcome and to bring an atmosphere of creativity into teamwork processes during the course. The second aim, being for students to give course feedback to instructors directly as a part of the workshop.

**Purpose of course:** Students were expected to become familiar with sustainable architectural design solutions. An integrative design approach was carried out in each of the working groups.

### 3.4 Creative cooperation, methods & skills course

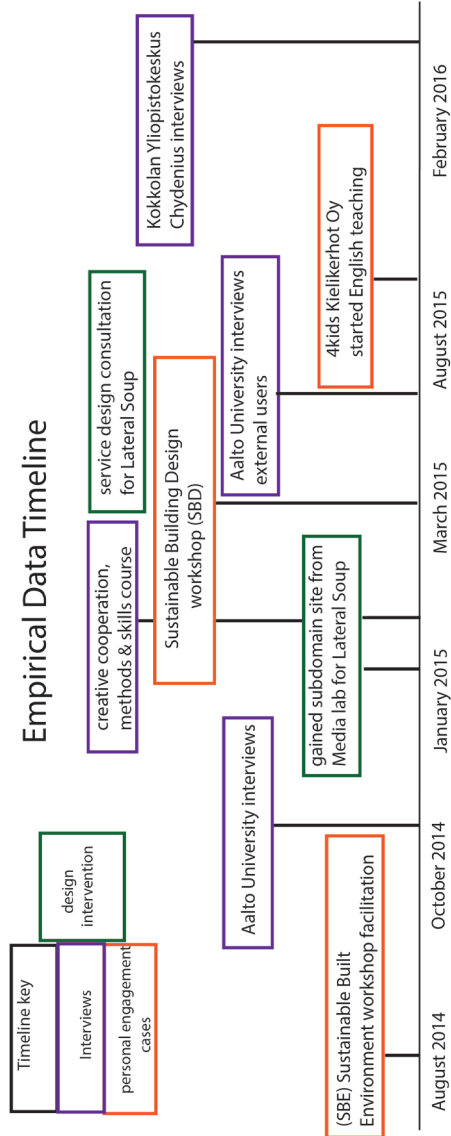
The course took place within the Department of Design at Aalto University, and was organized by Paula Siitonen.

**Purpose of course:** Students were expected to become familiarized with skills, methods, processes and theories that support creative cooperation between diverse people in complex environments, Siitonen (2015). The content of the course consisted of interactive lectures and student facilitated workshops within diverse teams, to understand the concepts of creative cooperation.

## 4.0 Methods,data & timeline of research

### **Aims of empirical data**

The qualitative research method I used, is referred to as the grounded theory research process, which is a systematic way of researching from the social world. This method is used to bring organic understanding to complex problems, and create links to solve challenges. The research method was first explored in the publication, the Discovery of Grounded Theory, Strauss (1967) since then, it has evolved as a method to gather qualitative research, and to create theories based off of knowledge that is broad. In this manner, my interviews were conducted from both higher education and alternative primary education, in order to get a broad view of teaching techniques. The personal engagement cases were analysed according to the research question after they were documented. The research process was an iterative one in order to soak up information over a period of time that developed from August 2014 until March 2016.





# 4.1 Interviews

In this section I will attempt to discover through the empirical data what has been understood about group learning practices in higher education, and in primary education through interviewing professionals and students in both educational levels and fields. The personal engagement cases, and their significance to the research question and literature, will be analysed in the discussion.

Total interviews: 14

higher education: 7
external: 1
primary education/alternative learning teachers: 6

Name/gender	profession	Time
Lauri Salokangas male	Instructor and course coordinator, structural Engineering department,Aalto Uni- versity	50 minutes
Saija Hollmén female	researcher in interdisciplinary learn- ing, Aalto University	60 minutes
Markku Lappalainen male	instructor, course coordinator, Department of Architecture , Aalto University	90 minutes
Juha Paavola male	Head of structural en- gineering department of Engineering, Aalto University	90 minutes

Djebar Baroudi male	Instructor, structural engineering department, Aalto University	50 minutes
Simon Le Roux male	instructor and workshop facilitator, Department of Architecture, Aalto University	30 minutes
Hannu Hirsi male	instructor, structural engineering Department, Aalto University	50 minutes
Nicholas Ugas Male	Sweco, Architect, working in interdisciplinary groups	60 minutes
Fabiane Laube female	Practicing teacher and manager, 4KidsKielikerot Oy MA education	30 minutes
Sonja Jokinen Female	Teacher at 4KidsKielikerhot Oy, MA student in Education	30 minutes
Simona Encheva Female	Teacher at 4KidsKielikerhot Oy Bachelor's design degree	30 minutes
Marjaana Leivo Female	Course coordinator and co-founder of Consortium Chydenius Yliopisto, Kokkola Phd and MA researcher in education studies	60 minutes
Maija Murtomäki Female	MA Education, Kokkolan yliopistokeskus Chydenius	60 minutes

Antti Helminen Male	MA Education, Kokkolan yliopistokeskus Chyde- nius	60 minutes
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The questions were modified specifically for each interview category participant based off of their teaching specialization, and whether it was conducted with children or adults. This was in order to get two viewpoints; from both higher education, and alternative primary school education, in relationship to the research question.

Interview participant categories by profession	Questions asked according to the category of the interview participant:
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<p>MA education students and teachers (note: all students interviewed have had practical teaching experience already within the Finnish school district.)</p> <p>Course coordinator, teacher specialized in autistic learning</p> <p>Kokkolan Yliopistokeskus Chydenius, Finland</p>	<ol style="list-style-type: none"> <li>1. Do you think interdisciplinary learning is important?</li> <li>2. What are your opinions on the significance of short term workshops in higher education?</li> <li>3. What are the parallels or similarities between child and adult learning? How do you think they learn in different ways?</li> <li>4. What is your field of study for teaching?</li> <li>5. Do you know what participatory learning is? What is your opinion on it?</li> <li>6. Do you have experience with short term group workshops that are meant to inspire creativity and innovation in groups? Has movement, storytelling and role play been integrated into your education? Do you think HE could benefit from the integration of these techniques?</li> <li>7. What is the difference between teaching children and teaching adults?</li> </ol>
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<p>4kidsKielikerhot Oy teachers</p> <p>(note: teachers included MA education students, practical teachers and the manager of the 4kidskielikerhot Oy)</p>	<ol style="list-style-type: none"> <li>1. What are the most essential techniques to get your students to learn?</li> <li>2. What is creativity in your opinion?</li> <li>3. Do you feel students learn best in groups or individually?</li> <li>4. What inspires you in teaching methods?</li> </ol> <p>How do you gather new innovations for learning to improve your company /organization?</p> <ol style="list-style-type: none"> <li>5. What have been the techniques in the past that have failed or succeeded to improve courses or lesson plan content?</li> <li>6. Would you be interested in joining a free a web service within Aalto University to collect knowledge of workshops techniques and learning?</li> </ol>
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<p>Aalto University course coordinator and instructors/educational researchers in Aalto University outside of the department of ARTS</p>	<ol style="list-style-type: none"> <li>1. Do you use any workshop facilitation techniques in your courses?</li> <li>2. What sort of methods of teaching would students in the department of Engineering and Architecture benefit from in interdisciplinary working groups?</li> <li>3. Do you think cross-disciplinary workshops between architecture and engineering students within Aalto would have a positive learning impact?</li> <li>4. What is your opinion on specialization based learning as opposed to interdisciplinary learning?</li> </ol>
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## 4.2 4kidskielikerhot Oy process

### Teaching Methodology:

The lesson plan is created to instil the concept that the students learn collaboratively through pro-active involvement. There is a strong emphasis on creating an environment where group cohesion is the essential tool to learning English for children who have little familiarity with the language. Most of the students are native Finnish speakers. The lessons are impacted with games, singing, tangible processes and movement. According to Lengel (2010), movement makes learning more effective because the brain needs to interact with people, things and its environment. Class cohesion activities using movement build a sense of community and interaction among classmates.

#### Alternative Learning techniques used:

- use of role play
- storytelling
- physical movement
- extrinsic and intrinsic rewards
- open discussion ( for students with more advanced English skills)
- visual aids
- music as a learning aid and for background
- Singing is used as an aid for some of the lessons.
- noise
- tangibility



photos taken by Mats Vuorenjuuri

## Behaviour Methodology

The methods of managing behaviour play a large role in the structure of the lesson. According to the methodology there are three steps for treating misbehaviour:

- 1 Stop the lesson and show what is the right way to behave
2. Demand an apology
3. Praise the child for good behaviour



According to the ELT, Learning requires the resolution of conflicts. Conflicts, differences and disagreements are what drive the learning process Kolb (2005). The reasoning behind the behavioural methodology is that it is crucial to set behaviour limits with students in particular within afternoon clubs in order to resolve disagreements as soon as possible. Since the environment is not the traditional didactic learning style students might be used to in their normal school hours, they feel more able to express themselves. Every week there is a new lesson plan that integrates alternative learning techniques to encourage spontaneity of English language learning.





## An example of a lesson

Time Frame: 45 minute lesson

introduction to get to know everybody:

Hello/ hi!/ good morning/Good afternoon!/Nice to meet you!

What's your name? My name is&

How old are you? I am &(if there was enough time)

Then we played a fun blindfold game to break the ice and help the kids to get to know each other and their names. After that we got into a circle and we sang the song ``Hickory dickory dock`` while passing some envelopes which contained some cards. When the song ended the children holding the envelopes, could open them up and reveal their content. We did this 4 times in order to learn the following sentences:

The mouse eats cheese. The cheese is yellow.

The horse eats an apple. The apple is red.

The cow eats grass. The grass is green.

The shark eats fish. The fish are blue.

The children really enjoy this topic, because they very quickly understand the structure of the sentences and can PREDICT what's coming next and that makes them relaxed and confident to try and say the sentences. We also repeat as a groups the sentences in a TUNE/MELODY, so it is easier for them to remember and they feel happy to join in anytime and without any pressure.

After this, we moved on to our WORKSHEET time (at the end of every lesson we do the worksheet) and the children had to connect the animals, and their favorite food. More advanced students were given a more challenging worksheet in which, they could fill in the gaps with the missing words. (apple, cheese, fish, grass).

After the worksheet, the children got their CLUB FOLDER, in which the club teacher will keep all your child's worksheets and at the end of the term, they'll take it home and be able to show it proudly to you, parents!

At the very end of our club, the children get a sticker at the back of their folder and it is important to explain here that we use the stickers in class also to maintain order. If a child misbehaves more than three times, and gets three warnings from the teacher, she/he will not get a sticker that day.

-Laube (2016)

## Storytelling learning technique Exercise 1

tell a story to your friend: 10-15 minutes



Each lesson begins with a circle in order to create unity and understanding between the students.

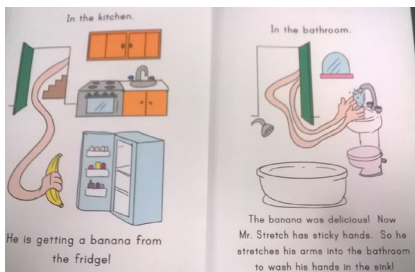


In this exercise the students were instructed to form pairs or small groups, in which they were given visual flashcards. They then had to prepare a story together

using five flashcards. If a child could not speak enough English, they could also act the story out like a theatrical play. According to Zak (2013), listening to another person tell a story possible creates empathy between individuals. This act could possibly have activated the release of oxytocin that creates empathy between people in order to better understand one another better. When competition is created in class cohesion activities it builds unity when teams can challenge one another in select events, Lengel (2010).

Storytelling learning technique exercise 2

Creating your personal story: 15-20 minutes



With this lesson, students learned a story in the traditional way by listening to the teacher tell it out loud. The alternative learning practice used was for students to create new characters within their physical book, and insert extra pages to personalize it according to their life.

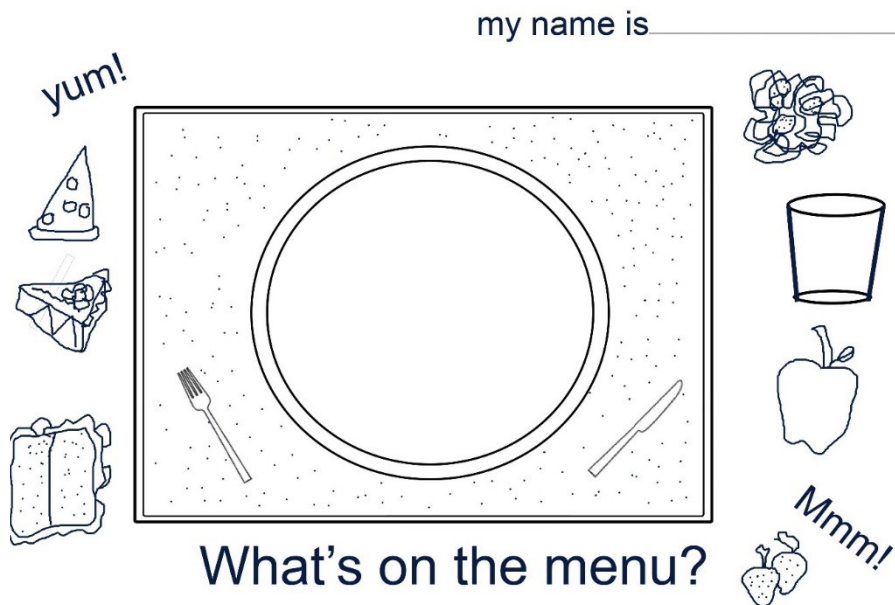


Use of Role play: 10-15 minutes

The image below, is a worksheet I designed to inspire the feeling of a restaurant within the classroom. The learning technique that was used in this lesson was for the students to role play being a customer in a restaurant with their peers.

The classroom was re-created similar to a restaurant with desks for tables, and myself the teacher as the waiter/waitress to serve them when the students order a food item. At the end of the role play game students use the restaurant worksheet as a craft to color, and cut out the fake foods.

Some common cafeteria meals like a sandwich, pasta, and pizza and cup of milk, were used to help the children become familiar with food they experience eating often. Before this worksheet was created I asked students what kinds of food they prefer to eat at home also.



Physical movement is integrated very heavily into the teaching program in which the teacher is encouraged to sit on the floor with the students and use the entire classroom space to complete the language learning exercises. The teacher is also encouraged to move around with the children and do activities along with them. This is done to instil trust in the student that the teacher can get to their physical and mental level to understand them.



Sometimes at towards the end of lessons, I would ask students to create a drawing of what they like or a story and describe it in English to me. This was a method of personalizing and reflective learning. The method of creating fictitious situations and ideas became as experiential process for students to learn English.

Kolb (2005) states learning as the process of creating knowledge.

Some games that are played throughout the lessons are referred to as ``four corners``, and ``treasure hunt`` in which students have to move together as a group towards each corner of the room, that represents an English vocabulary card. In this sense students are utilizing the entire classroom space. Leonard (1999) discusses that if a teacher knows how to create a varied location of learning within a traditional classroom it might help by speeding up the learning process.

After each lesson to show recognition to the student and their efforts in the club, a high five is given for all students whatever their level of English and behaviour that day. In this way this does not instil guilt for students that have performed lower in class, but awareness of their effort to be present at the lesson. For students that have misbehaved this also shows a clear ending to the disagreement, since their behaviour has already been acknowledged in the three step method. Students then feel then appreciated for their work, and feel reciprocity from the teacher for their efforts.



## 4.3 (SBE) workshop process



### Documentation of workshop techniques

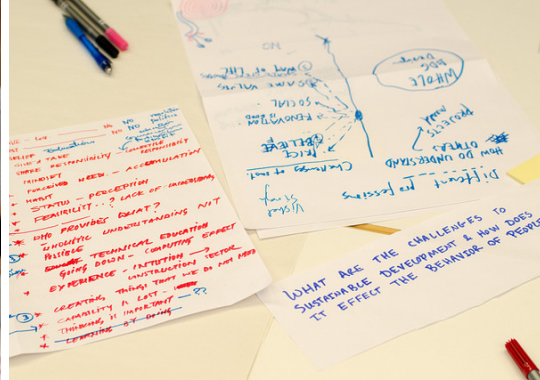
materials- papers, pencils, jazz music, desks

three tables with 4-6 people each.

location: Architecture Building, Otaniemi Campus,  
Aalto University,

Duration: Two hours

Simon Le Roux, assisted with directing participants in different groups if they were stuck with a question or phase of the workshop and gave advice for the structure and content of materials used. The workshop structure rapidly changed from two days, to one the day before the seminar. According to Csikszentmihalyi (1997). creativity is aided by a lack of resources which includes time and physical space.



participants	Nineteen international and Finnish participants from the Architecture, Engineering and design departments. Course coordinators, researchers, and teaching staff represented the faculty.
Learning techniques:	<ul style="list-style-type: none"> <li>critical questioning</li> <li>physical movement</li> <li>storytelling,</li> <li>background music,</li> <li>open dialogue</li> <li>tangibility</li> <li>solution finding</li> </ul>

## Introduction: Time 5 minutes

To break the immediate hierarchical barriers between students and staff I mixed up the amount of students and faculty at each table. It was clear that the roles were defined, and it was natural for faculty to sit with one another even though it was understood the workshop was meant to bridge gaps in thinking. Values and common interests usually bring people together, but can also create strict and structured boundaries in interdisciplinary team work. According to, Senge, (1994) mental modes are the deeply ingrained assumptions we have about a culture, organization or profile of a person.

## Storytelling introduction exercise: 10 minutes

At each of the tables were A3 sized papers for participants to create their own personal timeline. I played jazz music to create a relaxing atmosphere during this stage.

Timeline question posed for participants:



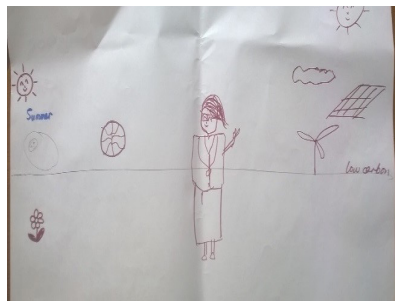
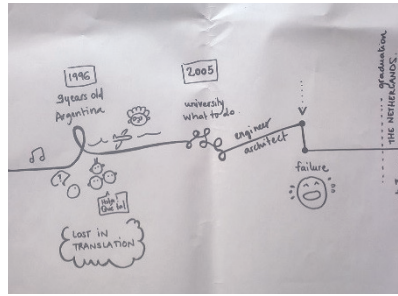
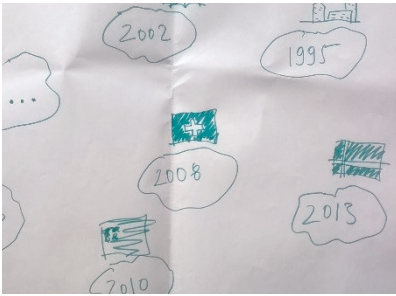
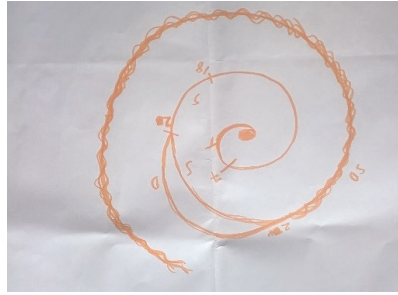
*What are the landmark years in their career or life that changed, or shifted their values? Illustrate these landmark years through drawings or words.*

At the end of exercise, I asked each group to share with one another their personal time lines as a story. Initially I thought people would be more resistant to this idea, but the groups needed much more time than planned. The time line writing became a meditation for the groups to conceptualize their thoughts and feeling



to one another and bring underlying values out immediately. I specifically asked participants to mark the most influential moments of their life on their timeline, and what they have valued during their professional career or lifetime as a whole. Kolb (2005) discusses that learning is best facilitated by a process that draws out the student's beliefs and ideas about a topic, so that they can be examined, tested, and integrated with more refined ideas.

## Selected timeline drawings



Challenge listing: 20 minutes

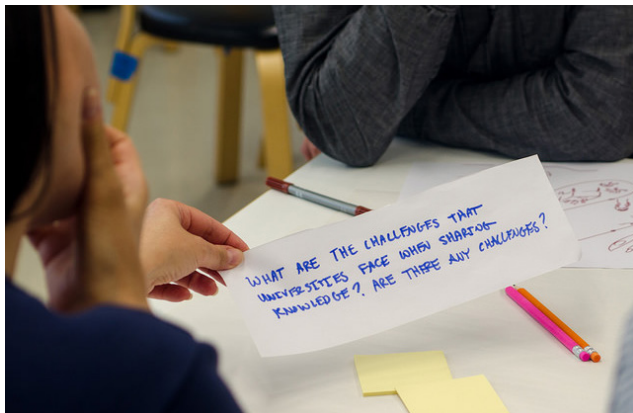
Each of the working groups received a challenge question which they had to answer together. Groups had the chance to openly discuss their answers and write them down.

Abbreviations key for table below  
Word key

Challenge Question: CQ	Group Answers: GA
------------------------------	-------------------------

CQ 1	GA 1 shared responsibility give and take mindset shift status-perception feasibility, lack of understanding Who provides what? technical education going down creating things we do not need capabilities are lost
CQ 2  CQ 2: What have been the challenges related to working together in multidisciplinary academic groups?	GA 2  how to understand each other same values way of life renovation is good small steps towards success different professionals

CQ 3: What are the biggest blocks to rapid action & co-creation?	GA 3 Who provides what? technical education going down creating things we do not need Capabilities are lost.
--	--



Above, a question from the challenge listing round for one student.



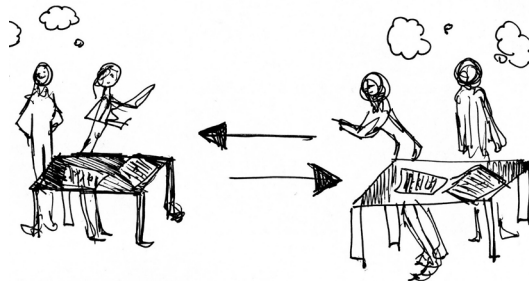
## Shifting spaces and questions phase: 5 minutes



Prof. Ali Malkawi, Saija Holmen, and Creative Sustainability graduate Olli Partanen

Participants had to leave their challenge listings, and jump to another table, to work off of another group's challenge questions. In order that the groups would become less attached to their questions, I had participants switch tables so they would have a fresh perspective of the topic and move in order for their brain to also function properly. According to Lengel, (2010) movement makes learning more effective since that the brain needs to interact with people, things and its environment. Class cohesion activities where students are moving at the same time build a feeling of community and interaction among classmates.

Movement within a workshop is illustrated by Brown (2005) as leaving behind roles, preconceptions and uncertainty in order to lose ourselves and become bigger among several people.



## Solution articulation phase: 20 minutes

With these same questions that the previous group articulated, the next group of participants developed solutions based off of the challenges listed. This phase was built off of layers of what the previous group had been discussing. In this case there were two sets of solutions.

## Open dialogue round: 20-30 minutes

The term Dialogue originally comes from dialogos which means `` meaning passing through.. a free flow of meaning between people, in the sense of a stream that flows between two banks Senge (1994). The purpose is to go beyond any one person's understanding. As opposed to discussion which can be compared to a ``ping-pong ball game where we are hitting the ball back and forth between two people. ``The purpose of a facilitator in dialogue sessions, is to direct the group in the right course. In this way the dialogue does not go to discussion and must keep the dialogue going by suggesting questions and participating in the dialogue. This act then challenges the traditional, hierarchical models, and proposes a method for sustaining partnerships. After the participants had been working in the groups with one another, I opened up the dialogue, by asking questions related to the challenge questions that were laid on the tables. I decided to do this rather than each group presenting their topics in order. Paulo Freire describes the praxis as that which includes reflection and action upon the world in order to transform. Central to the concept of praxis in the `` naming of the world, which is both active in the sense that naming something transforms it-and reflective-in that our choice of words is accomplished through dialogue of equals`` Kolb (1984, p.30).

Shifting spaces and questions phase: five minutes

Facilitated Dialogue questions

<b>Questions: What does expertise mean in a multidisciplinary sense?</b>	<b>Participants response:</b>  Developing expertise or becoming a generalist Design is now a form of problem solving Management consultancy Specialist? What does it mean now anyway? To be researchers and strategists?
<b>Questions: How can universities share knowledge and understanding?</b>	<b>Participants response</b>  It is important for universities to have a physical and digital knowledge sharing platform. To make it visible for the public. Exposing work! exchange programs

## 4.4 (SBD) workshop process



Students in working teams

### Documentation of workshop techniques

Details of workshop:

materials- papers, pencils, classical music, desks, different sized paper

Location: Lecture room 201, Architecture Building, Otaniemi Campus,  
Aalto University

Time: 11:15 a.m.-12:00 p.m.



Participants	Twelve students attended workshop. Architecture 1st and 2nd year Masters level international and Finnish students. students from Finland and abroad.
Learning techniques:	<ul style="list-style-type: none"> <li>• role play</li> <li>• divergent activities</li> <li>• open dialogue</li> <li>• storytelling</li> <li>• background music</li> <li>• open dialogue</li> <li>• tangibility</li> </ul>
Aim:	Main purpose was help student teams work together, and reflect on the course outcomes. To bring together a team working spirit.
results	<p>About more than half students saw the workshops as useful or enjoyable for learning.</p> <p>The other 40% of students saw the workshop content as useless for their learning. The method of feedback was verbal and written form while the professors were present in the room.</p>

## Introduction activity-Storytelling through random objects 7-10 minutes

The classroom was set up with various objects on a table for students to intuitively choose. Within the first few minutes, students were asked to pick up the object they most identify with, or represent what they value most. The question posed to each of the students was,

*“What object are you drawn to and why? What value do you see in these objects or the representation of them?”*

The purpose of this activity was to get the student’s mind off of the course content, and into a more personal perspective. “The discipline of working with mental models starts with turning our reflections back to ourselves to understand how we perceive the world, Senge (1994). The point of this activity was to bring in tangibility and value findings to ease the transition to self-exploration. The point of this activity also was to divert from the course structure and provide the students a brain break.



Course Content Reflection- 10 minutes

Students were then asked to form groups themselves in order to reflect on concepts that were introduced during the course.  
What have been the most useful concepts which you have learned from the course?  
The students were asked to list five concepts each, and then pick the most essential core concept.

Core concepts listed:

LCA Life cycle assessment	carbon footprint	participatory design
vernacular technical solution specific to area	history changing land use	LEED



## Use of role play and storytelling for communication- 10-15 minutes

After the core concepts were selected, I asked each group to become a storyteller of that one concept to a particular audience they might need to tell hypothetically in the professional world. At each table I left a paper with a storytelling form for each group. Each paper has either verbal, written or visual as the storytelling tool.

The students then were directed to take this most useful concept and communicate it to a sustainability consultancy, architecture firm, or engineering professional as their target audience. According to Leonard (1999), role play is the method for trying out the future. It raises issues that might not occur in theoretical discussions. I did not let student's pick their target audience themselves, but were given to them randomly.

According Kolb (2005), ``learning is a holistic process of adaptation to the world, it involves the integrated functioning of the total person-thinking, feeling, perceiving, and behaving.`` (p. 147). I wanted to let the students experiment with how they would be able to adapt to the professional world.



Telling a story to your target audience:  
15-20 minutes



Each group presented their key concept learned to the rest of the class, to their particular given professional audience.



## 4.5 Creative cooperation, methods, & skills course process



Content of workshop co-designed by: Oona Casalegno, Namkyu Chun, Richard Hellerstedt, Thanh an Dao, & Briana Romero.

In our first prototype workshop, music was the central icebreaker for the purpose behind the theme of reciprocity. Music was selected to create an environment where reaction and reciprocity become parallels in a group verbal conversation. The concept was that dialogue for change or innovation had become static, unnatural and the old pedantic modes of hearing another person dwell in the traditional hierarchical teaching methods. The main purpose of the workshop was to think about the body as a whole systematic organism that responded to those around each other through the learning concept of reciprocity.

## 40 minute time frame for workshop

1. Welcome Team and Workshop Introduction 2-3 min

2. Preparation

- Two groups divided (count 1,2)

- Walk to outer space

2 (5) 3. 1st Activity - Make 2 parallel lines - Close eyes, stay in position, move your body according to the music - Open eyes, imitate the movements in your line, and respond those of opposite in other line.

4. 2nd Activity

(NO TALKING)

- Stay in line, each receives a paper note with a task (no show others)

- Group number 1 makes a body sculpture according to what is said in the paper note. You have to come up with a theme of your sculpture together, while you follow your private mission. The sculpture can be constantly moving or fixed. The sculpting time is 3 minutes. Group 2 is watching the sculpture from an audience area.

- Let's change, group 2 makes the body sculpture and group 1 is watching

5 (20) 5. 3rd Activity (NO TALKING) - Make a line according to a firmness of your normal handshake. In one end is the lightest handshake and on the other end the strongest handshake. 5 5 (30)

- Now go around and give handshakes that are normal to you. When you shake hands with someone, agree on a rating of 1-10 together with them. Motivate why you think the handshake you did was worth that rating. Receive grade and comments of your own handshake too. Continue shake hand with another until the time is up. Try to understand how other people feel your handshake.

6. (NO TALKING BUT SOUND)

- Make one big circle so that your back is towards the center and you are facing outside the circle.

- Now everyone will receive an instrument or instructions how to make a sound. Clockwise, one will start playing an instrument and the next one will add to that. Let's go around the whole circle.

7. Wrap up & Feedback - Put reciprocity question in the center of the circle. -

Invite participants to express their comments. Replace the question with the workshop feedback questions and make another round of feedback.



In the next section, I will discuss the findings produced from both the interviews and the personal engagements cases. In the discussion I will make conclusions based off of these findings and compare and contrast key techniques of learning in relationship to the empirical data and literature.

## 5.0 Findings

It seems that the interdisciplinary student workshops seems to be more prevalent in the department of Arts, within Aalto University than in the departments of Engineering and Architecture. It seems that alternative childhood education practices do not include some valuable and crucial aspects of the (HE) workshop learning processes. The interviews obtained and personal engagement case research suggests there could be a positive effect of having more workshop based learning within (HE) for all fields of university studies.

The appearance of workshop based learning for students have become a technique of group learning in particular within both Aalto University and Kokkolan Yliopistokeskus Chydenius. The intention with interviewing the teaching staff in the department of Engineering at Aalto University was to get an overview of the teaching techniques and how similar they were to other departments within Aalto University. In 1989, Marjaana Leivo co-designed the Kokkolan Yliopistokeskus Chydenius learning curriculum to be experiential based, and group learning centric, in order to promote new methods for teaching knowledge between different kind of teachers in working groups. Leivo has seen the similarity between higher education practices in her teaching program and practices with teaching children. According to her ``Learning through experience`` is the living book of the adult and with children there are many techniques that are very similar to how to teach adults in group work.

It was noted during the interviews with students studying in the field of education, the addition of storytelling, movement, music, and role play are seen as a positive implementation of creative practices. This being if there would be enough balance between the demands of their other coursework, and did not take extra time out of their work load schedule for the student. The MA program in education has been designed for students to learn how to teach children by directly experiencing a child's learning in an ELT state.



The course structure of their curriculum is that university students enroll in various courses, that students would then teach to children later on in working life in order to understand the full concept of teaching. The university students are then literally stepping into shoes of the child, in order to understand their role better as a teacher. Students are expected to attend music and religion class in order to know how to teach it well.

In discussion about the aspects of child learning, some of the most successful techniques to get children to learn are songs, visuals, role play and physical movement according to literature related to alternative childhood learning and the 4kidskielikherot methodology. As opposed to adults, children need positive reinforcement about their behaviour in order to be good learners and a lot of misbehaviour management. Behaviour is in turn linked to how focused the child in the class, and to what extent the child will behave well.

With both children and adults it seems that breaking the hierarchical gaps were the key to a better learning environment for the student. The elements to teach children include teaching with a child's mind or getting into the brain of child as much as possible. When students are in groups it was also suggested they feel more secure and are able to learn better than on their own. It also seems there needs to be an adaptation of the learning content in order to better suit the audience whether it be adults or children.

Within the structural engineering department at Aalto University the range of teaching and specialization was helpful in understanding how instructors viewed interdisciplinary practices and learning techniques. Their experience of working in the field with architects and engineers were diverse, and helped me to explore what sort of challenges might arise for an instructor teaching interdisciplinary groups. The learning techniques that are currently used in the department of Structural Engineering on the bachelor's level, are tangibility and collaborative design, and less focused on teamwork skills like developing cooperation and communication.



Prof. Baroudi demonstrates a workshop activity in which his structural engineering students learn the material bending of a bridge through the cooperative construction of creating a prototype version.

According to comments from the Engineering department workshop facilitation is seen as more ``design related`` and has less of a significance than individual's assignments for undergraduate level, but could be beneficial in the Master's level. According to Professor. Baroudi interdisciplinary learning is limited because of the importance of students having a base of knowledge before a very cross-disciplinary approach . In his teaching experience, the bachelor's level should be taught top-down and more specialized for students to learn a skill. It seems then that structural engineering requires very specific basic knowledge in order to have interdisciplinary workshops. Since the structural engineering department still seems less multidisciplinary in course work than other departments, could it be because of the nature of the discipline? Juha Paavola spoke about teaching knowledge to students through direct experience. ``You cannot pour knowledge into a person's head it needs to come from them.' There have been plans within Aalto University that suggest there are efforts to shift this mindset from the bachelor level, to a more cross- disciplinary approach.

In order for BIM, which is an integrated sustainability program used by architects and engineers to work effectively, the interdisciplinary team has to have a solid relationship with one another in order to effectively use this technical tool. That means for the team, common values, aims and ideas, for how to execute sustainability features. Engineering and architectural practices need to be joined

by shared values more, in order to produce a building or structure that is organic and lasting for adaptability and time.

There has been one structural engineering course on the bachelor level, ARTS+ENG students where engineering students worked in teams on a project together. Developing the team work skills were the most important part of the course, and was used to help students understand the divisions of work tasks and general challenges of teamwork. Most of the students within the course work were from engineering background though, but worked on tasks where sustainable design and collaborative skills were emphasized. This emphasis has become essential to create an effective plan for learning how to communicate ideas between one another. There is a lack of effectiveness in this plan though since it was only engineering students participating in the course.

In 4kidskielikerhot Oy technology is used only for background and singing. All the games and other activities utilize tangible worksheets, and other alternative learning processes. Using humour has also been shown to improve the learning environments in order to create more class cohesion. In the 4kids language club students are comprised mainly of native Finnish descent. In one class there is an average of 1-2 multicultural children. The most common ethnic diversities are Russian, and Swedish speaking children. Teachers commented that when teaching children in alternative learning environments, not only does the child have to learn adaptability as a skills, but the teacher as well needs to know how to be inventive and intuitive to the needs of the students.

The future of education according to both primary level educational professionals and university instructors, includes an increase in group learning activities, and the need for a more positive and open environment to experiment with using various learning techniques. Based on the personal engagement case research studies it seems children usually feel too shy to have an open dialogue if their English language skills are not high enough, so open dialogue will not be discussed as a similar learning technique.

(SBD) design workshop was considered too short according to students, which was created to be the same length as one used in 4kidskielikerhot which was forty-five minutes, while there was no negative feedback about the longer length of the SBE workshop, which was two hours long with a short break.

the Findings for each case studies are mentioned in the following sections briefly.

## 4kidskielikerhot Oy

One of the outcomes I noticed from the beginning of the term until the last day was how much more natural, children became in speaking English and relating to one another. Some of the children who were too shy to speak or play any of the games, were able then to comprehend English and become more expressive. Many children formed friendships with the other students by the end of the club in order to work together on the language learning material. In this way small groups were formed and usually children similar in behaviour and attitude began working together.

## SBE Sustainable Built Environment Workshop

The timelines that were produced in five-ten minutes were descriptive, artistic and graphic. The fact that they were very diverse in content and style might, have been reflected by the different disciplines. Some had much more pictures and others with words jumbled and translated into different languages. There was a mixture of professors and students from engineering, design and architecture present. The methods of questioning how to improve university cross-collaboration and seeing it from a student point of view was incredibly effective in the workshop for the documented outcomes.

Some of the positive feedback I received from the workshop was that the level of difficulty was good for both advanced workshop participants and beginners. The transitions, and the initial social shift of placing students with other professionals helped create an atmosphere that was mixed with broken tension. For many students they liked that they were placed on the same level with professionals in a workshop setting. The other aspect of the workshop format that helped to create a good learning state was to have the groups shift tables. This was an exercise in adaptability in order to get fresh ideas from new ideas that others have already created. I have seen this method done in some of my courses before, but instead of preparing participants for it, I surprised them with this shift of mind in order to captivate creative thinking. Rather than adding content beforehand for the challenge listing phase, I choose content based on how the seminar developed, and the energy level of participants.

## SBD Sustainable Building Design Workshop

Students responded that they could not really understand how all of this related to the course content specifically, but that they enjoyed the process of the workshop and thought that there should be more workshops in the future for this particular course. In order to get feedback for the course, as well as the workshop, I asked students to write down how they perceived the workshop and course separately. This became a method to receive valuable feedback to improve the course or workshop structure in the future.

An area of the workshop that I feel failed was understanding was that the time frame of forty five minutes to one hour was too limiting for students to get into an autotelic experience. Poet Mark Strand describes this moment well, the idea is to be so saturated with it that there's no future or past, it's just an extended present in which you're, uh, making meaning. An autotelic experience creates a place for students to feel their creativity flow. (Creativity, 1997) With the storytelling exercise some students remarked that the workshop felt too rushed.

The original intention was to get engineering students and professionals involved in the workshop, but it was not possible either for the instructors to get engineering students enrolled in the course. The course is meant to be interdisciplinary but because of the marketing and overall concept of the course mostly only architecture students are interested in taking it.

workshop feedback	course feedback
<p><i>I did not really see the point of it.</i></p> <p><i>It is obvious that architects prefer visual tools to communicate. So why did we do a workshop about this?</i></p> <p><i>the workshop provided still what is already proved and studied.</i></p> <p><i>The picking stuff you like is a lot of fun.</i></p> <p><i>first part did not relate?</i></p> <p><i>task was good to see how different people see and understand subjects and presentations.</i></p> <p><i>fun part of the lecture!</i></p> <p><i>Gives more energy and gives different views to a topic.</i></p> <p><i>more workshops!</i></p>	<p><i>It was good to listen from people with different backgrounds each week.</i></p> <p><i>There were clear and useful lectures. They emphasized the social aspect and concept of the building.</i></p> <p><i>The design task is a little tricky and obscure which might not be a bad thing.</i></p> <p><i>interesting lectures and topics</i></p> <p><i>too loose general, and theoretical</i></p> <p><i>overlapping lectures with Sustainable Urban Design studio</i></p>

## Creative cooperation, methods & skills course

This course was very useful for learning how to plan a workshop by experiencing it directly. The concept of reciprocity as a workshop theme was very relevant to the research. The positive influence of both physical movement and music as an aid were clear findings. The feedback from participants regarding the music activity were more positive than the other techniques that we used.



**figure 1.0 Key learning techniques**  
*A Comparison table*

<b>Key techniques for learning</b>	<b>Alternative learning for childhood education</b>	<b>HE (Higher education) workshops</b>	<b>Opportunities for changing and enriching teaching techniques in HE</b>
<b>Group heterogeneity</b>	<p>This has been a benefit to have groups which include different ages to learn. It also seems to help students who are younger or less advanced catch up with other students. It seems that children do not need a base level.</p>	<p>Heterogeneity has proven to be beneficial for creative purposes but also difficult for groups to find common knowledge and understanding.</p> <p>This usually slows down the decision making process and causes frustration within groups.</p> <p>There still needs to be base of learning for interdisciplinary working methods as well.</p>	<p>(HE) practices could be improved by an increase in creating course with mixed heterogeneity from the bachelor's level for a limited amount of courses.</p> <p>Interdisciplinary congruency could be a factor in workshops where students share values and ideas from the start their studies.</p>

<b>Duration of sessions</b>	Typically 45 minutes	Typically 90 minutes	The differences seem well justified. According to my findings, adults in (HE) regard short workshops as frustrating. Student also feel frustrated if the workshop takes valuable time from course work.
<b>Use of music</b>	<p>Utilized for students to learn English words and encouraged to sing with the teacher. Sometimes it is used with background music to create a relaxing environment.</p> <p>It has also been used occasionally during activities to aid in the learning development process.</p>	<p>It has been used infrequently in HE and was used during the two experimental workshops I did. Music was not used for direct learning but for stimulating a relaxing environment. Some students noticed the music and sometimes it was not commented on.</p>	<p>Music could be used to unify a group and as well as to aid in relaxation, simply as background noise.</p> <p>It could be tested as a main feature of the course work if it is a class cohesion activity to unify a group together.</p>

<b>Role play</b>	Very effective for learning and mutual understanding.	Role play has been effective in workshops but needs to relate very well to the content of what the purpose of the workshop is.	Role play can be implemented more in cases where students can test out professional environments before actually entering them outside of higher education. It could also be a good tool to break heterogeneity of a group.
<b>Storytelling</b>	It has proved to aid in both mutual understanding and increase learning.	It seems to be an important factor in learning which many people were able to find mutual understanding and increased learning.	Storytelling could be used more during workshops and especially as method to improve communication and shared values.

<p><b>Safety</b> (mental and physical )</p> <p><b>children &amp; adults</b></p>	<p>Children need more discipline in learning environments which is why behaviour management with interdisciplinary skills plays a specific role in childhood learning.</p> <p>Children also feel safe with consistency when they understand they are within the class boundaries, know the rules very well, and understand the structure of the lesson before it happens.</p>	<p>Adults can handle more changes in environments, difference of changing a classroom or physical environment. This can aid in interdisciplinary learning as well by not keeping the workshop consistent in the same place. It is important adults feel able to speak openly in workshops and are given the chance to state ideas and concerns without judgement.</p>	<p>Adults need confidence and to feel listened to. There could be workshops which are specific in listening skills.</p>
<p><b>Movement</b></p>	<p>When it is directly integrated into the lesson plan it has been very effective for a stimulating learning environment.</p>	<p>Short movement have been effective especially when it shifts hierarchical positions, like for example between teachers and students.</p>	<p>Movement seems essential in higher education to also aid in the stress that might come with interdisciplinary group work.</p>

<b>Motivation (Intrinsic and Extrinsic Rewards)</b>	<p>Children value curiosity as an intrinsic reward usually more than adults.</p> <p>Intrinsic rewards aid in learning because they are specialized for the student to learn what students are interested in and what interests them.</p>	<p>Adults seem to have a lower motivation for intrinsic rewards especially if it limits their time or energy.</p>	<p>Extrinsic rewards such as good grades could be used to balance workshops and team skills workshops. The extrinsic reward for working well together and finding compromises could be implemented more.</p>
<b>Tangibility</b>	<p>Children do very well with tangible activities. Some children who are hyperactive become bored and need more movement but the majority of kids enjoy it. Children also like to work together more during this phase of learning.</p>	<p>Tangibility seems to be an important aspect of both (HE) workshops and has worked well for learning.</p>	<p>Tangibility could be introduced more.</p>

Figure 1.1 Shared learning techniques

Personal Engagement Research Findings	
	learning techniques used
higher education (SBD)Sustainable Building design workshop	storytelling
Creative Cooperation and Methods & Skills course	roleplay tangibility background music integrated student feedback
higher education (SBE) Sustainable Built Environment Workshop	problem and solution finding storytelling background music tangibility open dialouge
primary education 4kidslikerhot Oy	music visual aids storytelling physical movement tangibility roleplay
music	shared learning techniques
	storytelling physical movement tangibility roleplay

## 6.0 Discussion

Based on the findings, it seems that both higher education workshops, and alternative childhood learning has proved to be comparable within six learning techniques; storytelling, role play, movement, music, tangibility, group heterogeneity, and mental safety.

The key learning technique table 1.0, suggests there are many similarities between alternative childhood learning and HE workshops. As an argument against this connection though, it also suggests there are difference with how the techniques for learning are used for students. For example with music, it was used with children as mainly a learning aid, while in HE it is simply used for background noise or relaxation during workshops. The use of storytelling for children was mainly intended in or to learn a foreign language, rather than to share values and ideas as used in HE which could make it less accurate of a similar finding. The findings of 4kidskielikerhot Oy prove that behaviour and cooperation with other students improved drastically by the end of the semester as well as their learning though which means that alternative learning environments for children are meant for better cooperative skills.

Group heterogeneity was used in alternative childhood learning in order to have different age and skill levels within one group. Group heterogeneity was used HE for mixing academic disciplines and ethnic diversities in cross disciplinary programs. It seems than that although forms of these techniques have been used in both HE and alternative childhood learning, the intention to use them as learning techniques for different purposes is still a valuable finding. The concept of movement in the HE workshops specifically refers to an hierarchical shift between people and the concept of movement in alternative childhood education is about expending energy, group cohesion and teacher involvement. The link between these key aspects across the different fields could possibly show how class cohesion is the link to unify students for workshops within HE. It is also clear that connections between these learning factors and interviews, has led me to understand the need for a cooperative environment that includes group and class cohesion for students to thrive in heterogeneous environments.

Some failures from the workshops were that (SBD) did not include an interdisciplinary audience, but only architecture students in which some the

activities such as the storytelling, were regarded by some students as useless because of the lack of diversity of participants. The point of the storytelling activity in the (SBD) workshop was to help students shift their brain from being so focused on the course, to get them standing up and interacting. According to Carey (2014), distraction is beneficial for learning and retaining knowledge.

The outcomes of the workshops were not evaluated equally since there was a formal fifteen minute feedback session for students at the end of the (SBD) workshop as opposed to the (SBE) workshop. Role play has proven to be a beneficial learning technique to create mutual understand between students for both children and adults and a feeling of safety to express ideas learned openly. The bridge which is has created pathways between the use of games for learning in both levels is through the outcome of ``shared experience`` and ``team building`` Dieleman, (2006, p. 841). Games for adults to learn sustainability practices have been useful because they have created the same shared experience that children experience while using role play in their English language learning. The roleplay tool then has proven to be useful for many purposes. The learning environments such ``class cohesion`` which could be another term for ``team building`` in HE fields.

It should also be noted that some of the similarities between alternative childhood learning were not present in all HE personal engagement cases, and seemed most present in the department of Design at Aalto University through the course Creative Cooperation and Methods. One concept understood is that the motivational difference between children and adults willingness to learn collaboratively. A strong motivation has been a proven indicator of whether an adult would decide to work on their own or in a group setting. It was also noted by many students in HE, that to work together demands more focus, and power that working alone. Some of the reasons for this is the need for long discussions, mutual decision making, and understanding one another from different educational backgrounds and cultures. Based on the feedback from the workshops, then these challenges could possibly be aided by the use of a more relaxed and inspiring atmosphere in which these learning techniques, could be implemented into higher educational workshops.



If these techniques could possibly create a positive and mutually cooperative environment for adults together, without taking excess energy from students for other course work, they could be beneficial for learning. Extrinsic rewards work well for both children and adults as a part of the group learning process. Since there is a high human development gap and educational level between alternative childhood education and HE the factors were comparable within certain limits.

Motivation to learn together rather than apart seems to be more present in childhood education than in HE but it was not clear whether the child's motivation was driven solely by an extrinsic or intrinsic reward, or that they enjoyed the process of working together. If an adult feels forced to work in a group rather than by a natural motivation, interdisciplinary group work would not produce the same results and processes as those with children. It could be that children do much better with groups work than adults purely because they are curious of one another and their place. Children fully recognize the interdependence of one another and are not afraid to question assumptions about life and learning through this association.

It could also be that their interpersonal congruent skills are higher than those of adults since they possibly question more their place in relationship to others. Since children seem to be more inclined to work together rather than apart, there might be more of a positive learning outcome for the shared learning techniques. The techniques currently in HE for interdisciplinary working groups such as open dialogue, solution finding, and critical thinking, are clearly HE centric and should not be replaced by alternative childhood learning techniques; but could be aided by them.

The aspect of safety for the student, in varying degrees, has proven to play a role in the learning process for children and adults while working together. Physical and mental safety is emphasized more in alternative childhood learning methods, than in HE. Mental safety and the freedom to speak openly is one of the reasons that workshops are effective for interdisciplinary groups in HE since facilitators have the responsibility to direct the discussion or argument in an effective way. With adults, it is not necessary to emphasize physical safety between one another, while there are three methods to deal with bullying between students according to 4kidsKielikerhot Oy. It seems though that adults thrive in environments where

they feel listened to, and are not put as a top-down approach. When students are listened to they have stated they feel a sense of empowerment that therefore aids in the development of their learning within a group. Interdisciplinary learning techniques in which adults feel safe for open dialogue and discussion, in learning in which knowledge can happen through a transformative experience, Kolb (1984).

The ELT process that included open dialogue was a factor in all of the HE workshops, and helped to develop student's ideas about the concepts and also feedback for the course or workshop. The (SBD) workshop concerning role play, grasped the everyday knowledge to bring that into a unique and memorable form of learning for the student. Although Lengel (2010) suggests that the time span of the child is similar to that of an adult, this finding suggested that longer interdisciplinary workshops for adults are more appropriate, than shorter alternative childhood learning session where attention spans are different for children.

There can be some criticism towards the ELT, if learning techniques are considered to have a positive outcome for the students or any outcome at all. The ELT has been criticized by traditional education as not having enough learning outcomes. This is due to the concept that it is derived from the idea that learning is best perceived as a process, and not in terms of outcomes. The traditional behavioural theories of learning created by Watson, Hull, Skinner and other traditional learning theorists have criticized the theory for this aspect. Kolb (1984) The ELT is built on the assumption that ideas are not fixed, but immutable elements of thoughts and re-formed through experience, which is not unlike the process of a higher education workshop or alternative learning techniques for children. Because of the importance of course outcomes for students, a workshop could aid as the experiential learning aspect, but does not have to give the direct outcome of learning. While interviewing the structural engineering department, the main concern was that students will need to show the outcome of a concrete skill. The key connecting point that seems to be missing from the opinion, was that basic knowledge can be present within a team of architecture students, and design students even on the bachelor level and could be useful for interdisciplinary learning.

Tangibility as a learning technique could then be used for the construction of an objects created by bachelor level students from different disciplines. Based on the

answers of students having such a specialized degree in the structural engineering department, it may be that teachers and students usually feel more comfortable to be with others like them. (Leonard, 1999) discusses that the challenge with teamwork and group cohesiveness is that groups usually form where like people are with like. (Kolb, 1984) has stated that the wider real world environment can be actively rejected by educational systems at all levels. This might be outdated since there has been a growing trend of real-life enactment, proving that the ETL theory may be too outdated to stand alone as the backbone for alternative childhood learning practices. Senge, (1994) discusses the experiential learning theory as potentially dangerous if students do not understand the effects their experiments, products or processes may have on the external environment. We learn best from experience, but we never directly experience the consequences of many of our most important decisions. It could be also this viewpoint is taken from a business management perspective and not purely academic so his statement might not be completely valid.

ELT grasps the everyday knowledge to bring it into a unique and memorable form of learning for the student. The SBD workshop concerning role play mimicked this. Some of the key concepts to facilitation while conducting the university workshops was time management. Although Lengel (2010), suggested that the time span of the child is similar to that of an adult, the two workshops conducted suggested that the SBD design workshop was considered too short according to students, which was created to be the same length as one used in 4kidskielikerhot, which was forty five minutes.

In the following sections 7.0, I will describe the design intervention Lateral Soup, and propose how the concept and content has been shaped by the empirical data.

## 7.0 Design Intervention- Lateral Soup website

The role of technology for educational purposes was debated in the research for children and adults. I finally arrived at consensus to create a prototype WordPress site and service design scheme aimed for higher education interdisciplinary working groups. When asked about the future of education from teachers, there were many comments from both higher education and alternative childhood learning, that technology would definitely play a role in the future of education.

In the documentary by Ovaska, (2015) students were questioned if courses would benefit from interactive platforms? A total of 92% percent of student said yes to this question. While in the process of designing the wireframes for the Lateral Soup, I was able to view and understand my target audience and website aim with two external resources. I received guidance from consultants from the Fjord for Accenture service design agency within the Aalto university program Dialogi, and within the media Factory at Aalto University.

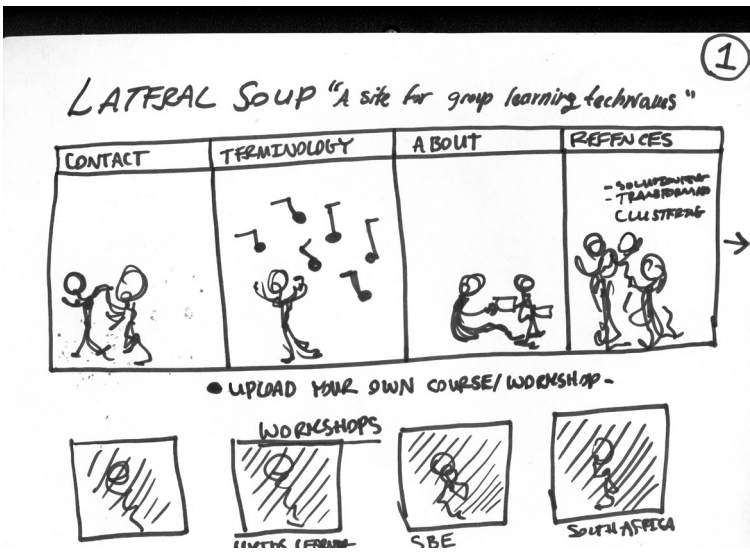
Although it is noted that the rise in educational material for technology is increasing, it was not suggested it correlated to the creative output of students. Based on interviews it seems that technology is implemented into both university and alternative primary level education more, but does not help multidisciplinary groups to become more creative. There was also a negative reaction to the effect it has on group work, and whether it is a hindrance or effective. Vähäsantanen (2011) discusses the rise in technological external resources that are created to orchestrate interactions, and task structures in group learning. Lateral soup is a wireframe and idea platform based off of research conducted. It is not a solution but an idea base for learning techniques.

I wanted to create a design that made sense for the user, and helped me to discover how I wanted to discuss the outcomes of this thesis. Boyer (2011) discusses quick iterations of framing the problem, and sketching potential solutions to create a virtuous cycle of learning. The concept of the site now, is that it will be viewable for the public and open for organizations and people outside of the university. Because of the limited mobility of my experience with WordPress as an interactive website, it is now more of an informational setting. The service design scheme I used though suggests that the site will function as more of an interactive platform to share workshop techniques in higher education.

The main target audiences for the site are workshop facilitators, course instructors and students. The practices presented in the site are meant to bridge the hierarchical constraints within the university, implement alternative childhood techniques, and aid in interdisciplinary and multicultural student wellbeing.

the workshop process can be fragmented, and split into recipes, to improve course structure in higher education. My learning process with this website was how to communicate these somewhat abstract workshop processes in a tangible way. Food and cooking seemed the most direct analogy at first. Cooking tools then are compared to workshop tools in a higher education settings. The main point of the site is also to take research from alternative childhood learning and show the parallels in that field to higher education workshops.

The prototype is viewable here: <http://sites.aalto.fi/lateralsoup/>



*In more detail the site will provide group learning terminology, and act as a workshop guide about learning techniques for adults in higher education working groups.*

### **Iterative Design Process (a design cycle process)**

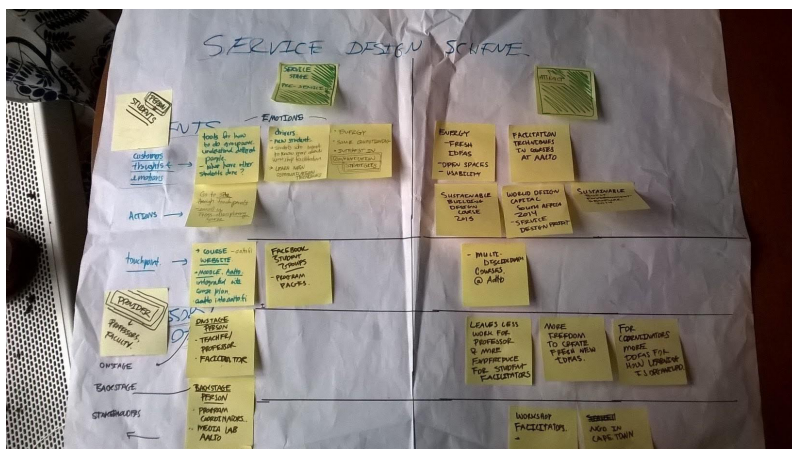
1. Creating mockups and paper wireframes with site
2. Consultation and permission with Media Factory for site content
3. Continuing to prototype the site with different paper wireframes
4. Creating the service design blue print
5. Taking the paper wireframes to the WordPress platform and creating the content.
6. Adding the visual content
7. Coming back to the service design blueprint to revise the audience and users
8. Creating the content of the site based on the empirical data obtained.
9. Coming back to the paper wire frames again and then the content to better suit the new target audience.

The main aim of Lateral Soup has evolved into an informational tool for students and faculty to use as a reference for bridging hierarchical teaching methods, and to create an informational setting where student can give feedback to professors and share workshop techniques.

According to Polaine (2013) designing a service design framework realistically depicts the process. This process includes the internal and external factors that happens hypothetically, before and after the design.

In the service design scheme the backstage users are referred to in this context as department coordinators and instructors. The students are front stage audience and users of the scheme. The touch points are always Lateral Soup. Using the service blueprint I went through the different phases to create a web service. Fjord's method of creating a service design platform separates the various phases into categories of the design process.

The main target audiences for the site are workshop facilitators, course instructors and students. The practices presented in the site are meant to bridge the hierarchical constraints within the university, implement alternative childhood techniques, and aid in interdisciplinary and multicultural student wellbeing.



draft for service design scheme

Discover- <i>framing the problem to gain a full understanding of the questions, scope and overall context of the service.</i>	Describe- <i>working towards defining the service by synthesizing research and finding key indicators for success.</i>	Design- <i>Bring the service. Conceive, prototype, evaluate to create a tangible service.</i>
Here I interviewed, professionals, took a part of and facilitated workshops, researched learning methods and tried to understand what has been already done in this area of study.	In this phase I began to develop the idea through the platform, based on what has been effective for group learning in workshops and case studies conducted.	While researching and carrying out workshop I created paper prototypes that were based off of the empirical data findings. I then gathered concepts based off of ideas from service designers. Unfortunately I was not able to get insights from interview participants for the service of the site but only for the content development.



# Final service design scheme

Stakeholders	attract	learn	evaluate	commit	reward	post/ after glow
thoughts & emotions	Energy, fresh virtual space	workshop techniques more active role 1st year international students Masters level	tools for learning about other students work in Aalto	can upload a workshop format that is related to building design or communication	get feedback for workshops online as comments	link site to online portfolio
receiver/person : students	students could receive credits for uploading a workshop or documentation of using one	apply knowledge to future courses and working life discover new courses through Lateral Soup workshop format structures visible in login	content bridges less hierarchy		include workshop documentation in portfolio	students get feedback from community
actions					students can receive credits for workshops from faculty	leave ratings/ reviews and collaboration students list or check when they have used a cooking tool
interest in learning new techniques						
Facebook groups, program pages						
touchpoint Lateral Soup as the meeting point Innovation						
provider: Faculty Aalto University	Cross-disciplinary courses at Aalto for ex. ARTS-ENG or other interdisciplinary courses	learn new teaching techniques from students documented workshops internal networking promotion of multidisciplinary practices to other universities	a free resources to build course structure easily improve course content & reputation as instructor	request a workshop from a students onsite	can allocate tasks to students & gain role as coordinator less work for faculty & more work experience for students	
onstage: instructors/ other organizations Workshop Facilitators	sustainability Consciousness student organizations, Workshop Organizations	techniques how to work with students as stakeholders of learning learn new trends & terminology for workshops	sign in option as external inside Aalto users	visible workshop formats available for use as a web user of Lateral Soup create networks with Aalto		
backstage: program coordinators						

## 8.0 Conclusions

Some questions left to ask are how can these learning techniques be implemented specifically into current interdisciplinary HE course or workshops, and to what extent to be effective? Hopefully, this publication has illustrated ideas about learning techniques that give students and teachers fresh perspective on workshops. Improving learning techniques for students by utilizing these new techniques, without removing the current learning techniques such as critical thinking, solution finding, and open dialogue could possibly have a very positive effect on interdisciplinary working groups. The aim then being to create a holistic education that has the capability to see the student's well-being as the main target for educational improvements in order to thrive in an ever-changing multicultural world.

Increased student feedback sessions within course curriculum should be the main aim of developing a course structure, rather than based on the experiences of teachers. As learning processes have progressed, there are still barriers within (HE) which include fear of losing a specialization, fear of sharing ideas, and of exploring the unknown according to this research. Once teachers and students are able to share thoughts and ideas about education to the full extent, they are able to see the potential in participatory approaches, and the growth that they offer to an institution.

Upon comparing learning techniques with both children and adults, it seems that if we can look with a child's eye and mind, to incorporate learning processes into a workshop setting it could be beneficial for the current multicultural and interdisciplinary education. For example, incorporating teaching methods for students into the structural engineering field so that later in the professional world, students could gain more practical and experiential practice in the demands of interdisciplinary communication could be one example. It would also be necessary for professors to keep lectures to a minimum and focus more on project orientated work. This would in turn encourage students to take a more active role in their education, and to keep innovation and creativity flowing throughout departments. On a last note on the topic of learning forgiveness, It is essential that students are able to forgive the learning process as unfolding, as well as teachers to step down from their role and become as grassroots as possible in their teaching approach. To get down to the role of the student can build a common ground for learning growth. In doing this, course instructors and teachers may be able to solve many challenges and still maintain a leadership role.

When referring back to the act of movement for a positive learning state there is no evidence that movement for a positive learning state should only be applied to children and not in higher education with adults Jenson (2010). Instructors could teach course materials while walking or on location outside of the classroom where movement is integrated into the content that is being taught. In conclusion, these alternative childhood learning techniques bring consciousness, presence, and awareness of within a group setting. Examples like these could help to continue to inspire and establish interdisciplinary learning, while leaving room to play.

## 8.1 Works referenced

Benedict, C. (2014). *How We Learn* (Narrated by Steve Kramer). Random House Audio.

Blakemore, C. L. (2003). Movement is Essential to Learning. *Journal of Physical Education*, 74(9), 1-4.

Boyer, B., Cook, J. W., & Steinberg, M. (2011). *Recipes for Systematic Change*. Helsinki Design Lab, powered by Sitra. The Finnish Innovation fund.

Brown, J., & Isaacs, D. (2005). *The World Café: Shaping our futures through conversations that matter*. San Francisco, CA: Berrett-Koehler.

Brooks, J. E., & Stock-Ward, S. R. (n.d.). *Workshops: Designing and Facilitating Experiential Learning*. Thousand Oaks, CA: . Sage Publications.

Csikszentmihalyi, M. (1997). *Creativity: Flow and the psychology of discovery and invention*. New York: HarperCollins.

Dieleman, H., & Huisingh, D. (2006). Games by which to learn and teach about sustainable development: Exploring the relevance of games and experiential learning for sustainability. *Journal of Cleaner Production*, 14(9-11), 837-847. doi:10.1016/j.jclepro.2005.11.031

Hennessey, B. A., & Amabile, T. M. (2009). Creativity. *Annual Review of Psychology*, 61, 569-598.

Hämäläinen, R., & Vähäsantanen, K. (2011). Theoretical and pedagogical perspectives on orchestrating creativity and collaborative learning. Finnish Institute for Educational Research, University of Jyväskylä, 6(3), 169-184. doi:10.1016/j.edurev.2011.08.001

Integrative Process Standard for design and construction of sustainable buildings and communities. (2011). The Institute for Market Transformation to Sustainability, 1-60.

Kolb, A. Y., & Kolb, D. A. (2005). Learning Styles and Learning Spaces: Enhancing Experiential Learning in Higher Education. *Academy of Management Learning & Education*, 4(2), 193-212. doi:10.5465/amle.2005.17268566

Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Englewood Cliffs, NJ: Prentice-Hall.

Lengel, T., & Kuczala, M. (2010). *The kinaesthetic classroom: Teaching and learning through movement*. Thousand Oaks, CA: Corwin.

Leonard-Barton, D. (1999). *When sparks fly: Harnessing the power of group creativity*. Boston, Massachusetts: Harvard Business Review Press.

Michelsen, G., & Godemann, J. (2011). *Sustainability Communication: Interdisciplinary Perspectives and Theoretical Foundations*. Springer Science Business Media.

Osborne, M., Houston, M., & Toman, N. (2007). *The pedagogy of lifelong learning: Understanding effective teaching and learning in diverse contexts*. London: Routledge.

Ovaska, M., & Mendoza, C. (Directors). (2015). *Aalto University student union & Aalto University* [Motion picture on DVD]. Finland.

Paulus, P. B. (2003). *Group Creativity, Innovation through Collaboration*. New York: Oxford University Press.

Polaine, A., Løvlie, L., & Reason, B. (2013). *Service design: From insight to implementation*. New York: Rosenfield Media LLC

Polzer, J. T., Milton, L. P., & Swann, W. B. (2001). Capitalizing On Diversity: Interpersonal Congruence In Small Work Groups. *Academy of Management Proceedings*, 2001(1). doi:10.5465/apbpp.2001.6133646

Saija, H., & Chris, R. (2013). *Arts ENG: Future Collaborative Academic Models at Aalto*. Aalto University.

Senge, P. M. (1994). *The fifth discipline: The art and practice of the learning organization*. New York, NY: Doubleday/Currency.

Siitonen, Paula. (2015). MUO-E8011 Creative Cooperation and Methods Retrieved from <https://moodle.aalto.fi/mod/page/view.php?id=95838>

Stanfield, B. (2002). *The workshop book: From individual creativity to group action*. Gabriola, B.C.: New Society.

Sugarman, L. (1987). *Experiential learning: Experience as the source of learning and development*, David A. Kolb, Prentice-Hall International, Hemel Hempstead, Herts, 1984. No. of pages: Xiii 256. *Journal of Organizational Behavior J. Organiz. Behav.* 8(4), 359-360. doi:10.1002/job.4030080408

Wagner, H. R. (1968). *The discovery of Grounded theory: Strategies for qualitative research*. By Barney G. Glaser and Anselm L. Strauss. Chicago: Aldine Publishing Company, 1967. 271 pp. \$6.75. *Social Forces*, 46(4), 555-555. doi:10.1093/sf/46.4.555

Zak, P. (2013). *How stories change the brain. Greater Good: The Science of a Meaningful Life*.

4kidskielikerhot Oy. Fabiane Laube. Retrieved April 4, 2016, from <http://www.4kids.fi/>